
*What If? Paths Not
Taken—John M. Logsdon*



President John F. Kennedy speaks before a crowd of 35,000 people at Rice University on 12 September 1962. NASA Image 69-HC-1245.

I want to ask all of you to join me for a few minutes in a mental experiment. There is a certain sense of determinism as we review a period of history, like the forty years of U.S. human spaceflight. There is an implicit assumption that there were no alternatives to the way things happened. If you step back even half a step, you know that's not true; that along the way, history could have been very different if different choices had been made, if different events had happened. So I have arbitrarily picked a few situations in those forty years and invite you to ask along with me: "What if things had been different?"

This notion of counterfactual history has some legitimacy. I have used it as a class assignment for my students in space policy, asking them to write about what might have occurred if different choices had been made. Dwayne Day, a former student and now a colleague, has suggested a whole symposium on counterfactual space history, and that might be an interesting thing to do someday. As I looked into preparation for this talk, I discovered there is a body of literature on counterfactual history. And, not surprisingly in the Internet age, there are even Web sites devoted to the topic!

So let us start with the first "what if." The Mercury Redstone 2 flight on 31 January 1961 carried the chimpanzee Ham. It went too high and too fast. Ham experienced over 10-Gs on reentry, and the spacecraft landed several hundred miles down range. He was a very angry chimpanzee when rescue teams reached the Mercury capsule. The problem that caused the deviation in flight trajectory turned out to be very simple to identify; it was quickly diagnosed as a malfunctioning valve. It could have been fixed, and the next flight, which had been scheduled to

carry the first astronaut, could have been launched without an intermediate test flight. But even in those days, safety was criteria number one. So Wernher von Braun and his team insisted on a flight of the repaired booster with a dummy spacecraft; that flight took place on 24 March 1961. The reality is if the 31 January flight had been successful, then the 24 March flight could have carried Alan Shepard. He would have been the first human in space, not Yuri Gagarin.

What might have been the impacts of that? It is reasonable to speculate that the Soviet reaction, the U.S. reaction to Yuri Gagarin's flight, President Kennedy's subsequent reaction to the Gagarin flight, the press reaction, and the political reaction that provided the fuel for Kennedy to ask his advisors to find a dramatic space program with which the United States could "win" might all have been entirely different. It is quite possible that the United States would not have decided to try to surpass the Soviet Union in spectacular space achievements. Then a very different space history would certainly have evolved.

Here is another possibility. In President Kennedy's inaugural State of the Union address, he invited the Soviet Union to cooperate in the exploration of space. In fact, early on, he had targeted space as an area for trying to develop mutual confidence and reduce tensions with our Cold War adversary. Kennedy was forced by the reaction to the Gagarin flight to compete, but he never gave up the cooperative idea. There's a book called *One Hell of a Gamble*¹ that traces the fact that Kennedy, between the

1. Aleksandr Fursenko and Timothy Naftali, *One Hell of a Gamble: Khrushchev, Castro, and Kennedy, 1958-1964* (New York: W. W. Norton and Company, 1997).

time he received the memo recommending Apollo and the time he announced Apollo on 25 May 1961, kept asking the Soviet Union “might you want to cooperate in space?” He received no response from the Soviets, so he went ahead with his speech on 25 May. Ten days later, in Vienna, he met Nikita Khrushchev for the one and only time and suggested “Why don’t we go to the Moon together?” As Asif Siddiqi has suggested, at that point, the Soviet Union didn’t have a lunar program, really didn’t take the United States very seriously, and the official party line was to link cooperation to general and complete disarmament. So there was no positive response from Khrushchev.

Kennedy never really went away from the idea. In September 1963, at the United Nations in the most public possible way, he suggested, “Why should this be a matter of national rivalry? Why don’t we do it together?” Khrushchev’s son, Sergei, has written that at that point the Soviet leader was beginning to think more about cooperation. Kennedy, ten days before he was assassinated, sent a memo to Jim Webb asking for a plan to cooperate with the Soviet Union in space, including a cooperative lunar-landing effort.

What would have happened if Khrushchev’s answer had been yes? Well, there are lots of possibilities. If the answer had been yes at Vienna in 1961, for example, the political support that made Apollo possible likely would have collapsed. This political support was based on competition, on the idea of the United States gaining a preeminent position in space. So if the Soviet Union had accepted Kennedy’s offer, I’m not sure Apollo would have ever happened.

Could the Soviet Union have carried out its part of the program if cooperation had taken place? It is not clear whether the post-Khrushchev leadership of Brezhnev and Kosygin would have been as committed to this. It is also debatable whether the Soviet Union could have contributed to the program in the ways that would have made international cooperation possible.

Alternatively, if Kennedy had not been assassinated ten days after he had signed the government directive to find ways of cooperation, perhaps cooperation could have worked. Maybe the United States and the Soviet Union, the leading space powers in the 1960s, could have found a way to join forces. If that had happened, other things such as the International Space Station might have happened much sooner. It would have set a precedent for collaboration in space exploration which we are working on making succeed now. We might have been able to start down the cooperative path thirty to thirty-five years ago.

Here is another counterfactual notion to consider. Most of you are familiar with the 1969 recommendations of the Space Task Group that the U.S. accept a post-Apollo goal of manned planetary exploration before the end of the century and build a series of large space stations during the 1970s as steps toward that goal. What if, instead of rejecting that report out of hand in the aftermath of Apollo, Nixon said, "Yes, we'll do that." What might have happened? There is a fascinating book called *Voyage*,² by British engineer Stephen Baxter, that starts with exactly this

2. Stephen Baxter, *Voyage* (William Morrow and Company, 1997).

premise. The novel describes the first mission to Mars in the 1980s! It's a very enjoyable piece of counterfactual history.

If we had kept the Saturn V, if we had launched a 33-foot diameter instead of a 15-foot diameter Space Station, launched with one Saturn V flight by the late 1970s, where would we have been? What kind of Space Shuttle would we have built? If the Shuttle had been developed primarily as the supply vehicle for the station, we might have been able to build a fully reusable, straight-winged, highly operable vehicle. The Space Task Group report called for the initial mission to Mars in 1986 or, in the extremely ambitious von Braun version, 1982. We might have been at Mars by now if the choice to set that destination as a goal had been made over three decades ago.

We have all gotten used to the concept of an International Space Station. There was not a whole lot of debate leading up to President Reagan's late 1983 approval of the Space Station, of whether it should be international or not. The advocates of the international approach knew that there was opposition within the Reagan administration. So they didn't have it debated as part of the original decision package. The decision to make the station international came at high levels of the administration in the weeks before Reagan's announcement of the Space Station in January 1984. But what if the program had been a U.S.-only Space Station? What if we had not included international partnership? Would the station have survived its many budget and schedule problems over the past two decades? Howard McCurdy has written in his book, *The Space Station Decision*,³

3. Howard McCurdy, *The Space Station Decision: Incremental Politics and Technological Choice* (Baltimore: Johns Hopkins New Series in NASA History, 1991).

that approval of the station was a very marginal decision in terms of political support. When the station ran into problems in the 1980s and 1990s, without the international partnerships, I think the program would have been much more vulnerable and likely would have been canceled.

But there is an alternative possibility. The international character of the station program added cost and complexity to the program. If there had been no international involvement, the program might have gone forward, with NASA and its contractors settling on a feasible design that could be built within budget and on schedule.

What if the decision had been made to postpone *Challenger* because of the weather conditions on that January morning, and, when the mission was rescheduled and launched, would it have been successful? I think subsequent history would have been much different. Here are just some of the possibilities. Maybe there was an accident waiting to happen because of the attitude of increasing acceptance of risk. If the accident had not come on flight 51-L, it would have come sooner rather than later, and the consequences for the program wouldn't have been much different. Another possible scenario is that the Shuttle would have become increasingly reliable. The Shuttle would have continued to carry commercial and military payloads, not just NASA payloads. The plan at the time of *Challenger* was to launch twenty-four flights per year. We might have approximated that with adequate budget and improvements in reliability.

We would not have a commercial ELV industry if that had happened. Certainly the *Challenger* accident opened a window

of opportunity. So maybe we would be using the Shuttle in a very different way than we are today.

Another possibility is that eventually the fixation on a Shuttle-only policy would have changed. We would have evolved into a more balanced and appropriate mixed-fleet strategy and be about where we are now.

Here is a final counterfactual possibility. The notion of inviting Russia to join the Space Station program has multiple parents, including Dan Goldin, Yuri Koptev and Yuri Semenov in Russia, and Leon Furth, who was Al Gore's National Security Advisor. There were many reasons to invite Russia into the program, but it was not a straightforward yes or no proposition. There was some significant skepticism about the wisdom of the idea. If Russia hadn't been included in the International Space Station program, what might have happened instead?

It may help to recall that in June 1993, the House of Representatives approved the NASA budget, including the Space Station, by one vote, 216 to 215. Bringing Russia in changed that to a hundred vote margin the next year. The Space Station was on the path to cancellation in the early years of the Clinton administration. It is thus a very plausible claim that bringing Russia into the partnership saved the station program, and, without Russia, it would have been canceled, and we would not have had to worry about all the problems with Russia as a partner.

Looking back at that period, the redesign team and then the advisory group to the White House, headed by MIT president Charles Vest, had several options that they looked at without Russian involvement. They believed that there were some good

options for a station redesign. It is possible that we could have come out with a good station program, on budget, on schedule, if Russia had not been brought into the partnership.

A final possibility is that what has happened would indeed have occurred. As the United States and its existing partners found out how hard the station was and grappled with running the program as a multinational venture, including crew rescue vehicles and all the power modules that are required, the program would have ended up looking more or less as it has looked over the past decade.

I think the point of this exercise in counterfactual thinking is twofold—first, to recognize that not only have choices been made in the past that defined the character of what has happened and that different choices were possible and would have led to different outcomes, and, second, that we are currently making similar choices for the future. Today's choices obviously will have significant long-term consequences for space development. Decision-makers have an image of a desirable future when they make choices, but they also realize that the link between current choice and desired result is always uncertain. As the philosopher Yogi Berra is often quoted as having said, “making predictions is hard, especially when they are about the future.”